



# Weather and Climate

## Death Valley National Park



◆ Death Valley is famous as the hottest, driest and lowest place in North America.

◆ Higher elevations are cooler than the low valley. Temperatures drop 3° to 5° F with every thousand vertical feet.

◆ Sunny skies are the norm in Death Valley, but winter storms and summer monsoons can bring cloud cover and rain.

◆ Wind is common in the desert, especially in the spring. Dust storms can suddenly blow up with approaching cold fronts.

◆ Weather data was compiled from park and National Weather Service record summaries for the years 1911 through 2005 for Furnace Creek in Death Valley, California.

## Temperatures and Precipitation

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
daily high (average)	65° F 18° C	72° F 22° C	80° F 27° C	90° F 32° C	99° F 37° C	109° F 43° C	115° F 46° C	113° F 45° C	106° F 41° C	92° F 33° C	76° F 24° C	65° F 18° C	90° F 32° C
daily low (average)	39° F 4° C	46° F 8° C	53° F 12° C	62° F 17° C	71° F 22° C	80° F 27° C	88° F 31° C	85° F 29° C	75° F 24° C	62° F 17° C	48° F 9° C	39° F 4° C	62° F 17° C
record high	89° F 32° C	97° F 36° C	102° F 39° C	111° F 44° C	122° F 50° C	128° F 53° C	134° F 57° C	127° F 53° C	123° F 50° C	113° F 45° C	97° F 36° C	88° F 31° C	134° F 57° C
record low	15° F -9° C	25° F -4° C	30° F -1° C	35° F 2° C	42° F 6° C	49° F 10° C	52° F 11° C	64° F 18° C	41° F 5° C	32° F 0° C	24° F -4° C	19° F -7° C	15° F -9° C
precipitation	.26" 0.7cm	.35" 0.9cm	.25" 0.6cm	.12" 0.3cm	.08" 0.2cm	.04" 0.1cm	.11" 0.3cm	.10" 0.3cm	.14" 0.4cm	.11" 0.3cm	.18" 0.5cm	.18" 0.5cm	1.92" 4.9cm

### Changing rainfall patterns

Rainfall is 50% higher now than in the recent past. Yearly precipitation consistently averaged about 1.6 inches of rain for the first 60 years of record keeping. The last 30 years has seen an increase, averaging 2.5 inches of rain a year.

### Longest summers

The greatest number of consecutive days with a maximum temperature of 100° F or above was 154 days in the summer of 2001. The summer of 1996 had 40 days over 120° F, and 105 days over 110° F. The summer of 1917 had 43 consecutive days with a high temperature of 120° F or above.

### The highest ground temperatures

The highest ground temperature recorded was 201° F at Furnace Creek on July 15, 1972. The maximum air temperature for that day was 128° F. Ground temperature on the valley floor is about 40% higher than the surrounding air temperature.

# Why is Death Valley's climate so extreme?

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## Why so Dry?

Winter storms moving inland from the Pacific Ocean must pass over mountain ranges to continue east. As the clouds rise up they cool and the moisture condenses to fall as rain or snow on the western side of the ranges. By the time the clouds reach the mountain's east side they no longer have as much available moisture, creating a dry "rainshadow".

Four major mountain ranges lie between Death Valley and the ocean, each one adding to an increasingly drier rainshadow effect.

## Why so hot?

The depth and shape of Death Valley influence its summer temperatures.

The valley is a long, narrow basin 282 feet (86 m) below sea level, yet is walled by high, steep mountain ranges.

The clear, dry air and sparse plant cover allow sunlight to heat the desert surface. Heat radiates back from the rocks and soil, then becomes trapped in the valley's depths. Summer nights provide little relief as overnight lows may only dip into the 85°F to 95°F (30°C to 35°C) range.

Heated air rises, yet is trapped by the high valley walls, is cooled and recycled back down to the valley floor. These pockets of descending air are only slightly cooler than the surrounding hot air. As they descend, they are compressed and heated even more by the low elevation air pressure. These moving masses of super heated air blow through the valley creating extreme high temperatures.

## Weather Landmarks:

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**1911** Permanent weather station established at Greenland Ranch now known as Furnace Creek Ranch.

**1913** 4.54 inches (11.5 cm) of rain held calendar year record for 92 years.  
**Coldest temperature:** 15°F (-10°C) recorded on January 8.  
**Hottest temperature:** 134°F (57°C) recorded on July 10 - five consecutive days reach 129°F (54°C) or above. Held record for the hottest place on earth until 1922.

**1917** 52 days 120°F (49°C) or above with 43 of them consecutive.

**1922** 1/2 inch (1.3 cm) of snow, January 29

**1922** 136°F (58°C) at Azizia, Libya in the Sahara Desert. Current world record high temperature.

**1929** No rain recorded.

**1931-34** Driest stretch on record - 0.64 inches (1.6 cm) of rain over a 40 month period.

**1933** Official park weather station moved to Cow Creek, 3 miles north of Furnace Creek.

**1953** No rain recorded at Greenland Ranch.

**1960** 129°F (54°C) recorded on July 18 at Greenland Ranch.

**1961** Official weather station opens at new Visitor Center in Furnace Creek. Cow Creek and Greenland Ranch stations close.

**1976** Floods wash out Golden Canyon Road - record five day February storm brings 2.37 inches (6.0 cm) of rain.

**1977-78** 5.09 inches (12.9 cm) of rain - rainy season record until 1987-88.

**1983** 4.54 inches (11.5 cm) of rain.

**1984** Summer floods close park roads for several weeks - 4.04 inches (10.3 cm) of rain for year.

**1987-88** 5.43 inches (13.8 cm) of rain - rainy season record until 1997-98.

**1995** Wettest month ever recorded in Death Valley - 2.59 inches (6.6 cm) of rain in January.

**1996** Hottest summer on record - 40 days over 120°F (49°C)

**1997-98** 6.09 inches (15.5 cm) of rain Spectacular wildflower bloom.

**1998** 129°F (54°C) recorded on July 17.

**2001** 154 days in a row of 100°F (38°C) or above

**2004** August floods kill two and close park for nine days. Some roads are closed for months.

**2004-05** 6.44 inches (16.4 cm) of rain. Wettest rainy season (July-June) on record.

**2005** 4.73 inches (12.0 cm) of rain - breaks 92-year old calendar year (Jan.-Dec.) record. Spectacular wildflower bloom.  
129°F (54°C) recorded on July 19.